REMARKS

No claims have been amended.

The Examiner rejected claims 1-9 and 12-29 under 35 U.S.C. 103 as being unpatentable over Sato (U.S. Patent No. 6,560,369) in view of Martucci et al. (U.S. Patent No. 5,764,805) The rejection of these claims on this basis is traversed. In particular, both Sato and Martucci, alone or in combination, fail to teach or suggest

> **"during the transform process, filtering quantized signal samples by applying scaled filter coefficients**, the signals samples first being filtered along the image in a first direction and then along the image in a second direction, **so that at the completion of the transform process of the image, at least a selected portion of the transformed signal samples are inverse quantized, wherein the inverse quantization is integrated into the IDWT process"**

as claimed or similarly claimed.

As noted in the specification on page 13 and shown in FIG. 5 of the present application:

> Fig. 5 is a block diagram illustrating a typical frame difference process with a feedback loop in order to perform video compression. As illustrated by the block diagram in the forward path, a DWT operation and a quantization operation are respectively applied by blocks 510 and 520. This corresponds to the approach normally taken to perform compression, as previously described. Therefore, a method of quantizing signal samples of an image during image compression in accordance with the invention described in the aforementioned related patent application, as previously described, may be employed. Nonetheless, Fig. 5 further illustrates the application of an inverse quantization operation 530 and an inverse DWT 540 (IDWT). *It would be desirable to have the ability to combine both the inverse quantization operation and the inverse DWT operation, such as the one provided in the feedback loop illustrated by 535 for the inverse DWT and inverse quantization operations, for example.* In addition to the advantages previously described of applying the previously described embodiment to the forward loop in place of 510 and 520 by combining them, advantages are also gained by similarly combining 530 and 540. This would further simplify and reduce the size of the circuit implementing the compression operation illustrated by Fig. 5 and, likewise, where the implementation is performed in software, a reduction in computation time may result.

Martucci does not teach a combined inverse quantization and DWT operation. Martucci merely shows the functions in a "dotted box" for illustrative purposes. The functions are separate and not combined. The processes of inverse quantization and inverse DWT are still separate processes, similar to the feedback loop 535 described above and shown in FIG. 5. There is no integration.

This is in contrast to the claimed invention where during the transform process, quantized signal samples are filtered by applying scaled filter coefficients, so that at the completion of the transform process of the image, at least a selected portion of the transformed signal samples are inverse quantized. This way, the inverse quantization is integrated into the IDWT process. This is accomplished by the signals samples first being filtered along the image in a first direction and then along the image in a second direction, so that at the completion of the transform process of the image at least a selected portion of the transformed signal samples are inverse quantized. This is repeated throughout the specification, such as on pages 13 and 17:

> In this particular embodiment of a method of inverse quantizing quantized signal samples of an image during image decompression in accordance with the present invention, a process to transform the quantized signal samples from the first domain, such as the frequency domain, to a second domain, such as the spatial domain is applied. During the transformation process, quantized signal samples are filtered by applying scaled or pre-scaled filter coefficients, in this particular embodiment. *The signal samples are first filter along the image in a first direction by applying scaled or pre-scaled filter coefficients, such as column-wise, and then the signal samples are filtered along the image in a second direction such as row-wise, by applying scaled or pre-scaled filter coefficients, so that at the completion of the transformation process of the image, the transformed signal samples are inverse quantized*.

> As previously indicated, it will be appreciated that many different embodiments are within the scope of the present invention. For example, although a method of inverse quantizing quantized signal samples of an image during image decompression in accordance with the present invention is described, alternatively, an embodiment may comprise, for example, a device, such as, for example, an integrated circuit. In such an embodiment, the integrated circuit may, for example, include input ports to receive signal samples associated with at least one image and the integrated circuit may include digital

> circuitry, although, of course, the invention is not limited in scope in this respect. The digital circuitry may have a configuration to apply a process to transform the signal samples from a first domain to a second domain and, during the transform process, filter signal samples, by first applying scaled filter coefficients to signal samples along the image in a first direction and then applying scaled filter coefficients to signal samples along the image in a second direction, so that, at the completion of the transform process of the image, at least selected regions of the transformed signal samples are inverse quantized. Likewise, other aspects of the previously described embodiment, for example, may be included, although, again, the invention is not limited in scope in this respect. Additionally, features not previously described may be included in an embodiment in accordance with the invention.

Martucci in fact teaches away from the invention in that any inverse uniform quantization is not integrated into multilevel DWT computation. As noted in Martucci on column 5, lines 60 to column 6, line 2, the inverse quantizer and inverse DWT provide separate functions. In particular, the inverse quantization and DWT computations are performed separately, not integrated. As noted in the present application, this may result in a relatively high amount of computational complexity or, alternatively, in some cases, employ separate pieces of circuitry to perform separate operations. Separating these operations in this manner, therefore, may result in lower performance in terms of speed and/or greater expense in terms of the amount of size of the silicon die where, for example, the operation is implemented through circuitry on an integrated circuit.

The above is believed sufficient to overcome the Examiner's rejection, although it is believed that there are other limitations in the claims that the cited patent also fails to meet. It is therefore respectfully requested that the Examiner withdraw his rejection as to these claims.

CONCLUSION

It is respectfully asserted that all of the claims pending in this patent application are in condition for allowance. If the Examiner has any questions, he is invited to contact the

undersigned at 323-654-8218. Reconsideration of this patent application and early allowance of all the claims is respectfully requested.

Claims 1-31 are pending in the application. No claims have been added.

The required fee for a two (2) month extension of time is enclosed. No additional fees are required for additional claims. Should it be determined that an additional fee is due under 37 CFR §§1.16 or 1.17, or any excess fee has been received, please charge that fee or credit the amount of overcharge to deposit account #02-2666.

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Respectfully submitted,

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Dated: September 30, 2004

By ____________________
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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, Post Office Box 1450, Alexandria, Virginia 22313-1450 on September 30, 2004.

Margaux Rodriguez *September 30, 2004*